

Notice of Allowability

Application No.

10/616,106

Examiner

Shouxiang Hu

Applicant(s)

WAYBURN, LEWIS S.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.


1. ☒ This communication is responsive to the 09-23-04 election.
2. ☒ The allowed claim(s) is/are 1-45.
3. ☒ The drawings filed on 09 July 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 20041207.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


SHOUXIANG HU
PRIMARY EXAMINER

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Craig N. Killen (RN: 35,218) on December 07, 2004.

The application has been amended as follows:

IN THE CLAIMS

1. (currently amended) An apparatus for controlling the temperature of at least one electronic device, said apparatus comprising:
 - a flow loop through which refrigerant fluid is conducted to alternately absorb and release thermal energy;
 - a thermal head connected into said flow loop for engaging said electronic device;
 - a base structure including a mount portion to which said thermal head is mounted, said base structure defining at least part of said flow loop so as to route said refrigerant fluid to and from said thermal head; and
 - said base structure including an isolation arrangement normally maintaining said mount portion in planar alignment with said base structure but permitting movement of

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said mount portion to facilitate engagement of said thermal head with said electronic device,

wherein said base structure comprises at least one configured slot so as to form a planar spring in said mount portion.

2. (original) An apparatus as set forth in claim 1, wherein said isolation arrangement includes at least one flexible arm defining a flow passage for said refrigerant fluid.

3. (original). An apparatus as set forth in claim 2, wherein said isolation arrangement has a plurality of flexible arms, two of said plurality defining respective first and second flow passages.

4. (currently amended) An apparatus as set forth in claim 3, wherein said plurality of flexible arms comprises a total of three flexible arms supporting in said mount portion.

5. (original) An apparatus as set forth in claim 2, wherein said flexible arm defines two parallel flow passages for ingress and egress of refrigerant fluid to and from said thermal head, respectively.

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6. (currently amended) An apparatus as set forth in claim 1, wherein base structure has a generally planar configuration, said mount portion and said isolation arrangement ~~being formed~~ are both defined by said at least one configured slots defined in said base structure slot.

7. (original) An apparatus as set forth in claim 6, wherein said base structure comprises a plurality of generally planar layers juxtaposed to one another.

8. (original) An apparatus as set forth in claim 7, wherein said base structure has an intermediate layer sandwiched between top and bottom layers.

9. (original) An apparatus as set forth in claim 8, wherein said intermediate layer defines flow passages forming said at least part of said flow loop.

10. (original) An apparatus as set forth in claim 6, wherein said base structure comprises two layers juxtaposed to one another, at least one of said two layers having grooves defining flow passages forming said at least part of said flow loop.

11. (original) An apparatus as set forth in claim 1, wherein said flow loop circulates said refrigerant fluid in a refrigeration system including a compressor and a condenser such that said refrigerant fluid will change between gaseous and liquid states to alternately absorb and release thermal energy.

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12. (original) An apparatus as set forth in claim 1, further comprising a valve located on said base structure, said valve operative to control flow of said refrigerant fluid into said thermal head.

13. (original) An apparatus as set forth in claim 12, wherein said valve is attached to said mount portion.

14. (original) An apparatus as set forth in claim 12, wherein said valve is formed by a pinch point configured in a flow passage of said base structure.

15. (original) An apparatus as set forth in claim 1, further comprising a controllable mechanism operative to move said thermal head into engagement with said electronic device.

16. (original) An apparatus as set forth in claim 15, wherein said controllable mechanism is actuated by a source of pressurized gas.

17. (original) An apparatus as set forth in claim 1, wherein said base structure has a plurality of mount portions adapted to carry a respective thermal head, each of said mount portions being supported by a respective isolation arrangement.

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18. An apparatus as set forth in claim 1, wherein said isolation arrangement comprises a planar spring.

19. (currently amended) An apparatus for controlling the temperature of a plurality of electronic devices, said apparatus comprising:

a plurality of thermal heads;

a base structure having a plurality of planar springs supporting respective of said thermal heads; and

each of said planar springs being movable to facilitate movement of a respective thermal head into engagement with a corresponding said electronic device,

wherein said base structure comprises configured slots so as to form said planar springs.

20. (original) An apparatus as set forth in claim 19, further comprising a controllable mechanism operative to move said thermal heads into engagement with respective of said electronic devices.

21. (original) An apparatus as set forth in claim 20, wherein said controllable mechanism is actuated by a source of pressurized gas.

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22. (original) An apparatus as set forth in claim 21, wherein said controllable mechanism comprises a semirigid bladder which pushes said thermal heads into engagement with respective of said electronic devices.

23. (original) An apparatus as set forth in claim 22, further including respective valves mounted to said base structure and associated with each of said thermal heads, said semirigid bladder engaging said valves to push said thermal heads into engagement with said electronic devices.

24. (original) An apparatus as set forth in claim 19, wherein said base structure is configured as a manifold defining flow passages for routing refrigerant fluid to and from said thermal heads.

25. (original) An apparatus as set forth in 24, wherein said base structure comprises a plurality of generally planar layers juxtaposed to one another.

26. (original) An apparatus as set forth in claim 25, wherein said base structure has an intermediate layer sandwiched between top and bottom layers, said intermediate layer defining said flow passages.

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27. (original) An apparatus as set forth in claim 25, wherein said base structure comprises two layers juxtaposed top one another, at least one of said two layers having grooves defining said flow passages.

28. (original) An apparatus as set forth in claim 19, wherein each said planar spring includes at least one flexible arm defining a flow passage for said refrigerant fluid.

29. (original) An apparatus as set forth in claim 28, wherein each said planar spring includes a plurality of flexible arms, two of said plurality defining respective first and second flow passages.

30. (original) An apparatus as set forth in claim 29, wherein said plurality of flexible arms comprises a total of three flexible arms.

31. (currently amended) An apparatus as set forth in claim ~~30~~ 28, wherein said flexible arm defines two parallel flow passages for ingress and egress of refrigerant fluid to and from said thermal head, respectively.

32. (original) An apparatus as set forth in claim 19, wherein said planar springs are each formed by configured slots defined in said base structure.

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33. (currently amended) An apparatus comprising:
a generally planar base structure defining a mount portion to which a thermal head is mounted, said mount portion being supported by an isolation arrangement;
said isolation arrangement being configured to permit movement of said thermal head between retracted and extended positions; and
said isolation arrangement being formed by configured slots defined in said base structure so as to form a planar spring in said mount portion.

34. (original) An apparatus as set forth in claim 33, further comprising a controllable mechanism operative to move said thermal head into engagement with an electronic device.

35. (original) An apparatus as set forth in claim 34, wherein said controllable mechanism is actuated by a source of pressurized gas.

36. (original) An apparatus as set forth in claim 33, wherein said base structure is configured as a manifold defining flow passages for routing refrigerant fluid to and from said thermal head.

37. (original) An apparatus as set forth in 35, wherein said base structure comprises a plurality of generally planar layers juxtaposed to one another.

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38. (original) An apparatus as set forth in claim 36, wherein said base structure has an intermediate layer sandwiched between top and bottom layers, said intermediate layer defining said flow passages.

39. (original) An apparatus as set forth in claim 36, wherein said base structure comprises two layers juxtaposed top one another, at least one of said two layers having grooves defining said flow passages.

40. (currently amended) An apparatus comprising:
a generally planar base structure defining a mount portion to which a thermal head is mounted, said mount portion being supported by an isolation arrangement;
said isolation arrangement being configured to permit movement of said thermal head between retracted and extended positions; and
said isolation arrangement including at least one flexible arm defining a flow passage for conducting refrigerant fluid,

wherein said base structure comprises at least one configured slot so as to form a planar spring in said mount portion.

41. (original) An apparatus as set forth in claim 40, wherein each said isolation arrangement includes a plurality of flexible arms, two of said plurality defining respective first and second flow passages.

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42. (original) An apparatus as set forth in claim 41, wherein said plurality of flexible arms comprises a total of three flexible arms supporting said mount portion.

43. (original) An apparatus as set forth in claim 40, wherein said flexible arm defines two parallel flow passages for ingress and egress of refrigerant fluid to and from said thermal head, respectively.

44. (original) An apparatus as set forth in claim 40, wherein said base structure comprises a plurality of generally planar layers juxtaposed to one another.

45. (original) An apparatus as set forth in claim 44, wherein said mount portion and said isolation arrangement are formed both defined by said at least one configured slots defined in said base structure slot.

Allowable Subject Matter

Claims 1-45 are allowed.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: Prior art does not teach or render obvious a temperature-controlling apparatus as defined in the allowed claims above, comprising particularly: a base structure with a thermal head

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being mounted to a mount portion therein, wherein the base structure comprises one configured slot(s) that define(s) a planar spring in the mount portion so as to allow the thermal head to move and to thermally engage with an electronic device.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References A-F are cited as being related to a temperature-controlling structure for an electronic device.

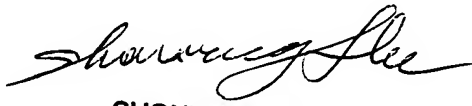
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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December 7, 2004


SHOUXIANG HU
PRIMARY EXAMINER